FACT SHEET
Hunters Point Naval Shipyard
Radiological Program

August 2014

This fact sheet provides information regarding the Hunters Point Naval Shipyard (HPNS) Radiological Program; offers an overview about what radiation is, how radiation is measured, and why radiation is found at HPNS; and provides an update on the Radiological Program investigations and cleanup at HPNS.

What is Radiation?

Radiation is energy given off by atoms as rays, waves, or particles. It can be in the form of light, sound, or heat. Humans are exposed to radiation every day from natural sources, such as the sun, X-rays, and smoke detectors.

How is Radiation Measured?

Exposure to radiation is measured in a unit called the "rem". A rem is the dosage for the biological effects of ionizing radiation for humans. Since radiation doses are normally very small, they are usually recorded in millirem (mrem), or one-thousandth of a rem. People in the United States receive an average of 624 millirems (mrem) of radiation per year from man-made and naturally occurring radiation sources (National Council of Radiation Protection and Measurements [NCRP] 160). Some everyday activities that include low-level exposure to radiation include the following:

- Watching television (1 mrem per year)
- Roundtrip flight from Los Angeles to New York City (3.7 mrem per trip)
- Getting a dental X-ray (1.5 mrem per X-ray)
- Exposure to the sun (40 to 50 mrem per year)

The following standards (called dose levels) have been established for public health and cleanup purposes. The Navy's standard for cleanup of sites at HPNS is well below these regulatory standards:

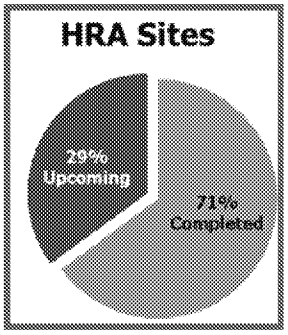
- Nuclear Regulatory Commission (NRC) standard for members of the public (100 mrem annually)*
- NRC standard for cleanup sites (25 mrem annually)*
- United States Environmental Protection Agency (USEPA) standard for cleanup sites (15 mrem annually)*

**Indicates dose level above naturally occurring radiation. These materials are called naturally occurring radiation because they are not from a man-made source and naturally exist in the environment.*

Why is There Radiation at HPNS?

From 1939 through 1974, the Navy used HPNS for ship repair and maintenance. These activities had the potential to utilize radioactive deck markers or luminescent dials, gauges, and signs, which were in common use during this timeframe. Additionally, HPNS was home to the Naval Radiological Defense Laboratory (NRDL) from 1948 to 1969.

NRDL developed instrumentation and evaluated the effects of radiation on living organisms and equipment, including the decontamination of ships involved in atomic testing.



A Historical Radiological Assessment (HRA) was completed in 2004. The HRA investigated radiological operations at HPNS and identified over 90 potentially contaminated sites.

Cleanup of Radiological Sites at HPNS

The Navy has been evaluating and cleaning up sites with possible radiological contamination at HPNS since 2004. Cleanup areas include buildings, sanitary sewer and storm drain lines, former disposal areas, piers, and ship berths and primarily consist of surveying and removal.

USS Ranger, Hancock, and Coral Sea docked at HPNS

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Occasionally, radiologically contaminated soil and materials cannot be removed. In these cases, the Navy ensures the contaminated soil or material is contained to protect the surrounding area.

When Is a Site Free from Radiation?

Removal of sanitary sewer and storm drain lines

A site is free from radiation when all the non-naturally occurring radiological material is removed from an area. The Navy uses the term "Unrestricted Free-Release" to describe when a site is free from the non-naturally occurring radiological contamination. When a site receives Unrestricted Free-Release, the land is available for any future use without restrictions. Steps to achieve Unrestricted Free-Release include the following:

- Characterizing sites by performing surveys and laboratory testing
- Review of site results and an onsite inspection by USEPA and the California Department of Public Health (CDPH)
- Submission of a letter from CDPH to the California Department of Toxic Substances Control (DTSC) approving the site for Unrestricted Free-Release

In some cases, the Navy uses radiological controls such as covers (containment) or land use controls to prevent people from coming into contact with low-level radiological contamination that cannot be removed.

These areas will obtain "Restricted Release," which means that certain land uses (e.g., residential) and activities (e.g., digging below certain depths) will be restricted at the site to ensure the containment remedy remains protective.

What Is the Status of Radiological Cleanup at Hunters Point?

The Navy's Radiological Cleanup Program at HPNS has made significant progress at the former shipyard, including removal of approximately 7,800 truckloads of soil (156,000 cubic yards [CY]) with potential radiological contamination, removal of approximately 29 miles (155,500 linear feet) of sanitary sewer and storm drain lines, and Unrestricted Free Release for 44 buildings and sites investigated for radiological contamination.

Radiological Cleanup Steps

Perform surveys at radiologically contaminated buildings and sites to determine if radiological contamination exceeds cleanup goals at HPNS.

If found, remove radiological contamination and separate it for disposal as radiological waste.

Resurvey the cleaned areas to make sure that all radiological contamination has been removed and that cleanup goals have been met.

Ship contaminated materials as radiological waste to a licensed disposal facility.

Write the final reports that summarize the radiological surveys, describe the material removed during the cleanup process, and document that the site has been cleaned up.

Protecting Public Safety

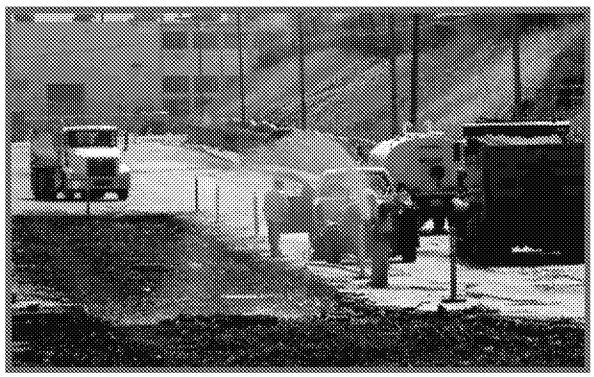
Warning signs are posted outside of radiological work

The Navy is taking numerous safety measures to protect onsite workers, tenants, and the surrounding communities. The Navy posts signs around the perimeter of the radiological work areas to notify the public of the ongoing work (see right); their presence does not mean unacceptable exposure to radiation is occurring for people who are outside of these secured areas. Onsite workers wear personal dosimeters to measure their cumulative exposure to radiation while working in known radiation areas for multiple days. The dosimeters measure radiation exposure and are used regularly to ensure workers are not exposed to unsafe amounts of radiation.

Other safety measures include dust control; daily air monitoring; collection of soil and building material samples from contaminated sites; proper disposal of radiologically contaminated waste; passing all materials leaving a cleanup site through a radiation monitor; and controlling access to, and posting public notices along, the perimeter of radiation work areas. The Navy conducts weekly radiation surveys around the perimeter of the work areas to confirm no radiologically contaminated material is present outside of the controlled work area.

Dust Control

Navy contractors are required to follow the HPNS Base-wide Dust Control Plan for all earth-moving activities.



Misting system to help control worksite dust

The plan includes the following requirements:

- Use of a misting system to wet down work areas and roadways.
- Stockpiles of soil are coated with a biodegradable polymer that controls windblown dust.
- Trucks hauling soil are required to be covered when entering and leaving HPNS.
- A 15-mile-per-hour speed limit is enforced for all vehicles onsite, and a 5-mile-per-hour speed limit is enforced in work areas.
- Rumble strips (raised strips to vibrate truck tires and loosen soil caught in the tire treads) at the exits of the work areas and a tire wash station help remove excess dirt and dust from truck tires as they leave the site.

Soil samples being collected for testing

Radiation Testing

During the cleanup process, all materials, including soil and liquids, in radiologically contaminated areas are surveyed and/or sampled to determine the levels of radiation present. Potentially radiologically contaminated soil is placed in 6-inch lifts on a Radiological Screening Yard (RSY). RSYs consist of several 1,000-square-meter screening pads constructed to prevent cross-contamination with the ground beneath. A radiation scan is conducted over 100 percent of the soil surface, and soil samples are collected.

Areas with radiological contamination are separated and placed in specialized radiological disposal bins for disposal at a licensed landfill outside of California. Following removal of the contaminated material, the screening process is repeated in those areas on the RSY pad to ensure all radiological contamination was removed.

Radiological scanning of building floor

Radiological scanning of building walls

Thousands of soil samples have been analyzed for radiological contamination at HPNS. Radiation air monitoring samples are collected and analyzed daily. Every air sample has been below action levels.

Personnel, Equipment, and Material Inspections

All radiological work areas are secured with in a Radiologically Controlled Area or "RCA." These areas are under strict access and procedural controls that include screening equipment and workers as they exit the area to ensure they are free of radiological contamination.

Truck Inspections

Trucks hauling non-radiological material off base are required to go through a portal monitor to protect against the inadvertent shipment of radioactive material. The portal monitor is one of several measures the Navy has to ensure

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radiologically contaminated material is properly disposed. The portal alarm will sound if radiation levels exceed the established criteria. An alarm could be due to naturally occurring radiation from the material in the truck or, potentially, from radiological contamination in the truck. If the portal monitor indicates that there are elevated radiation levels, then the truck is sent for a more thorough evaluation that consists of a contractor manually scanning the material with the radiation monitoring equipment. If the manual scan fails, then the truck is directed back to the area where the material originated for a detailed evaluation.

Radiological Waste Transportation and Disposal

- Radiological waste is sealed in hard top-covered, water-tight steel bins for storage and transportation to disposal sites outside of California that are licensed to accept this waste.
- The bins are properly marked and labeled stating they contain radioactive material, and strict Department of Transportation (DOT) regulations for transportation of radioactive material are followed.
- More than 4,300 bins of low-level radiological waste (soil, piping, and construction debris) have been removed from HPNS.

How Does the Public Know That the Land at HPNS is Free of Radiation?

The Navy wants to make sure that the HPNS community is confident that the radiological cleanup at HPNS has been successful, and there is no unacceptable risk to human health or the environment. To accomplish this goal, several federal and state regulatory agencies participate in the radiological cleanup process at HPNS.

USEPA, CDPH, DTSC, and the San Francisco Regional Water Quality Control Board have actively participated in the radiological investigations and removal actions at HPNS. Agency participation includes evaluating and approving cleanup goals and investigative strategies, and providing technical advice and oversight. NRC also provides oversight and annual inspections of the HPNS Radiological Program and radiological contractors working on the base.

Additionally, CDPH collects its own confirmation samples from many of the radiological cleanup sites and independently verifies that the area is clean before it issues a Unrestricted Free-Release letter.

Where Can I Get More Information About Radiation and Hunters Point Naval Shipyard?

American Nuclear Society
www.ans.org

Health Physics Society: Specialists in Radiation Safety
www.hps.org

U.S. Environmental Protection Agency
www.epa.gov

U.S. Nuclear Regulatory Commission
www.nrc.gov

World Health Organization
www.who.int

Radiation Answers
www.radiationanswers.org

American Council on Health and Science
www.acsh.org

Program Information:

For information on cleanup at HPNS contact:

Keith Forman
BRAC Environmental Coordinator
(415) 308-1458
keith.s.forman@navy.mil

To be added to the HPNS mailing list or for additional information, call or email the HPNS cleanup team:

Email: info@sfhpns.com

HPNS Info Line: (415) 295-4742

Reports Are Available For Review:

City of San Francisco Main Library
100 Larkin Street, 5th Floor
Government Information Center
San Francisco, CA 94102
(415) 557-4400

Hunters Point Naval Shipyard Site Trailer
(near HPNS security entrance)
690 Hudson Avenue
San Francisco, CA 94124

Navy Website
www.bracpmo.navy.mil

⇒ Under "BRAC BASES", select "California" from the drop-down menu

⇒ Click on "Former Naval Shipyard Hunters Point"